Remarks

This amendment is filed as a submission concurrently with the filing of the RCE to continue prosecution of the instant application.

Claims 1 and 6 have been amended per the above amendment. Claims 1, 3-4 and 6-12 remain pending in the instant application.

Claims 1 and 6-10 were rejected under 35 U.S.C. 12(b) as being anticipated by O'Connor et al (USP 5,648,767); and claims 3-4 and 11-12 were rejected under 35 U.S.C. 103 as being obvious in light of O'Connor.

O'Connor discloses a system for detecting the transponder of a vehicle that reaches an "arming loop" detector 24 along a toll lane. To achieve this, O'Connor relies on the use of a phase mono-pulse technique that uses the "boresight" of an antenna to focus onto an area where a vehicle, with or without a transponder, would arrive. Each antenna to be used in the O'Connor system has to have at least two elements to establish a spacing D based on the phase shift between the elements, which may be $\lambda/2$ or 180°, for defining the direction of the angle of arrival of the signal (Column 3, line 40 to column 4, line 12). The operation of the exemplar embodiment in which two antennas are used is disclosed in column 4, lines 66 to column 5, line 34.

As shown in the Fig. 4 embodiment and disclosed in column 5, line 35 to column 6, line 4, there are two sensors 24 and 28 provided on the toll lane, with sensor 24 being an arming loop sensor and sensor 28 being a clearing loop sensor. Further, the antennas 32 and 34 shown in the Fig. 4 embodiment are focused to an area of interest on the road that is sensor 24.

O'Connor does not disclose or suggest "a limited radio communication service zone that extends from the antenna and covers at least a portion of the area under the antenna

set to a distance which approximates a single vehicle", as recited in the amended claims. This is apparent from the O'Connor Fig. 4 embodiment, where by looking at the relative drawn to scale of sensors 24, 28 and vehicle 10, it is clear that more than one vehicle may be in the toll lane between the clearing loop sensor 28 and the arming loop sensor 24 at any one time. Moreover, in column 10, lines 37-40, O'Connor states, "The invention does not rely on the communication zone defined by the antenna pattern to establish the location of transponder." O'Connor went on to state that his invention utilizes the intersection of the boresight of the antenna array to create a point, which then is expanded to form a circle on the surface of the toll lane, which in turn becomes the detection area on the toll lane. In the Fig. 4 embodiment, the detecting area is the arming loop detector 24. See column 10, lines 53 to column 11, line 10.

Thus, the more logical and conventional reading of O'Connor is that O'Connor does not disclose or suggest an antenna that has a predetermined directivity for providing a limited radio communication service zone that has a length set to a distance that approximates a single vehicle.

A conventional reading also suggests that O'Connor does not disclose any vehicle sensor that is positioned within the service zone. Rather, as discussed above, the zone of detection by the O'Connor system is adjusted by the boresight of the antenna. For the O'Connor system, given that it is desirable to determine whether a transponder has reached sensor 24, the boresights of the antennas 32 and 34 are focused onto sensor 24. As a consequence, a vehicle approaching the toll lane of the O'Connor system does not need to reach any predetermined position of a limited radio communication service zone, as it only has to reach sensor 24, which is the detected zone for the O'Connor system.

Indeed, the O'Connor system may be more similar to the system disclosed in Figs. 1-4 in the specification of the instant application which allows a non-ETC vehicle that has passed sensor 24 to be erroneously deemed an ETC vehicle, when an ETC vehicle closely

follows the non-ETC vehicle and reaches detector 24 before the non-ETC vehicle reaches sensor 28.

To overcome any suggestion that the detector 24 zone in the O'Connor system could be construed to cover the service zone set forth in the claims, as noted above, claims 1 and 6 each have been amended to recite "a limited radio communication service zone that extends from the antenna and covers at least a portion of the area under the antenna set to a distance which approximates a single vehicle". Clearly, the service zone as now defined in the claims, and as shown in Figure 5 of the specification, is quite different from O'Connor's detector based zone, which is created by focusing the boresight of the antenna to an of interest area of the toll lane.

In view of the foregoing, the examiner is respectfully requested to reconsider the application and pass the pending claims to issue at an early date.

Respectfully submitted,

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